

### **Multi-Layered Inductively Coupled Helical Directional Coupler**

#### **5 Abstract of the Disclosure**

A coupling device in FIG. 3 consisting of upper and lower connecting plates 100 and 101 with external flanges parallel to transmission line (103) for coupling RF energy for forward power detection. The coupling device (100) incorporates a helix structure with rotation centered near or about transmission line 103 and incorporates embedded secondary structures which are parallel to transmission line and fixed a predetermined distance from the transmission line (103). These plurality of parallel flanges are used to increase the coupling coefficient and directivity of the helix coupler (107) and maintain geometries that optimize magnetic field coupling. One or more vias (102) are used to connect individual upper connecting plate (100) and individual lower connecting plate (101) to form the overall helix structure. The addition of the parallel flanges to upper and lower connecting plates allow for a greater coupling efficiency per unit length of transmission line 103.